

California Environmental Protection Agency

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## **Vapor Recovery Test Procedure**

### **Exhibit 4**

#### **Determination of Pressure in Underground Gasoline Storage Tanks**

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Air Resources Board

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1. **Applicability**

Definition common to all certification and test procedures are in:

***D-200 Definition for Vapor Recovery Procedures***

For the purpose of this procedure, the term "ARB" refers to the California Air Resources Board, and the term, "ARB Executive Officer" refers to the Executive Officer of the ARB or his or her authorized representative or designee.

This test procedure is used to quantify the amount of pressure present in underground gasoline storage tanks (USTs) installed at gasoline dispensing facilities (GDFs) equipped with a Phase II vapor recovery system. This procedure is applicable to underground manifold tanks equipped with pressure/vacuum (P/V) valves, a two point Phase I vapor recovery system, and 4-inch vapor adaptors.

2. **Principle and Summary of Test Procedure**

The pressure of the USTs is determined at the Phase I vapor recovery adaptor (dry break assembly) with a vapor coupler test assembly as shown in Figures 2 and 3 of TP-201.3 (***Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities***) or dust cap test assembly. The test assembly is equipped with a center probe, which opens the dry break, and a quick connect fitting that is connected to an electronic pressure measuring device or digital manometer. The test assembly should open the dry break without venting the USTs. For the purpose of compliance determination, this shall be conducted at GDFs after commencing operation. This test can be performed while product is being dispensed into motor vehicles.

3. **Range and Accuracy**

- 3.1 The minimum full scale range for digital manometer shall be 0.00 to 4.00 inches WC. The minimum accuracy shall be  $\pm 0.5\%$  full scale at 60 to 78 °F, and  $\pm 1.5\%$  full scale at 32 to 60 °F and 78 to 104 °F.

- 3.2 The temperature measuring device shall have a maximum range of 0 to 150 °F and shall be accurate to within 2 °F.
- 3.3 The stop watch shall have an accuracy of 0.1 seconds.

#### **4. Biases and Interference's**

- 4.1 No transfer of gasoline from any cargo tanks to the USTs shall occur within three hours prior to conducting this test.
- 4.2 Leaking vapor adaptors will not allow test assembly to achieve a leak tight seal.
- 4.3 This test shall not be conducted if A/L testing was conducted within the last 24 hours.
- 4.4 GDF's not capable of passing TP-201.3 shall be excluded from this test.
- 4.5 This test shall not be conducted if TP-201.3 was conducted within the last three hours.
- 4.6 Improper connection of dust cap or vapor coupler test assembly can result in accidental discharge of vapor due to positive pressure in UST's. Wait ten (10) minutes before retesting.
- 4.7 Temperature fluctuations during test period can result in erroneous values. All testing must be avoided when temperature differences exceeds 5°F.

#### **5. Equipment**

- 5.1 The dust cap test assembly shall be modified in the following manner:
  - 5.1.1. Tap, thread, and install a ¾ inch NPT threaded probe in the center of the dust cap (Figure 1). The probe shall be of sufficient length to open approximately ½ inch of the dry break while allowing the cap to maintain a leak tight seal on the adaptor.
  - 5.1.2. Tap, thread and install a ¼ inch NPT female quick connect fitting on the top of the dust cap, offset from the center probe (Figure 1). A Swagelok, part number SS-QC4-B-4-PM, quick connects fitting or equivalent is required.
  - 5.1.3. Use approximately 24 inches of ¼ inch (internal diameter) clear "Tygon tubing" or equivalent to connect the manometer to the dust cap (Figure 2). Install a ¼ inch male quick connect fitting, Swagelok part number SS-QC4-5-400 or equivalent, on one end of

a ferrule stainless steel tube (1/8 inch internal diameter) of approximately 1.5 inches. Connect one end of the "Tygon tubing" to the stainless steel tube and connect the other end to the digital manometer (Figure 2).

5.2 Alternatively, the vapor coupler test assembly, Figures 2 and 3 of TP-201.3 may be used in lieu of the dust cap test assembly.

5.3 Digital Manometer (Electronic Pressure Measuring Device)

Use a 0 - 4.00 inches WC digital manometer to monitor the UST pressure with a minimum sensitivity of 0.01 inches of WC. Dwyer Series 475 Mark III model 475-00-FM (0-4.00 inches WC) Digital manometer or equivalent is required. A copy of the manufacturer's operating instruction shall be kept with the equipment.

5.4 Vacuum Grease or Petroleum Jelly

Use commercially available vacuum grease or petroleum jelly to apply to the dust cap or vapor coupler test assembly gasket to maintain good seal.

5.5 Soap Solution mixture with spray bottle or "Snoop."

5.6 Temperature gauge or thermometer capable of measuring ambient temperature with a resolution of 2°F.

5.7 Stop watch with accuracy of 0.1 seconds.

## **6 Calibration Requirements**

A copy of the most current calibration shall be kept with the equipment to verify that the calibrations have been done appropriately.

6.1 All manometer(s) shall be bench tested for accuracy using a reference gauge, incline manometer or National Institute of Standards and Technology (NIST) traceable standard at least once every 180 days. Accuracy checks shall be performed at a minimum of five (5) points (e.g., 10, 25, 50, 75 and 90 percent of full scale) each for both positive and negative pressure readings. Accuracy shall meet the requirements of Section 3.1.

6.2 The temperature measurement device shall be checked at an interval not to exceed 180 days using an ice bath, ambient air, and boiling water. The accuracy of the temperature measuring device shall be checked against an NIST traceable temperature measuring device.

## **7 Pre Test Procedures**

- 7.1 Turn on digital manometer and allow instrument to warm up for five minutes.
- 7.2 Zero out digital manometer using adjustment pod on top of instrument in accordance with manufactures instructions. Drift may be minimized by re-zeroing immediately after use by venting both pressure port to atmosphere and adjusting the knob until the display reads exactly zero.
- 7.3 Apply thin layer of vacuum grease or petroleum jelly to gasket located under the dust cap or vapor coupler test assembly.
- 7.4 Attach male quick connect fitting of pressure line to cap.
- 7.5 Attach digital manometer to open end of Tygon tubing.
- 7.6 Ensure that the power to the Vaporsaver is on.

## **8 Test Procedure**

- 8.1 Attach the dust cap or vapor coupler test assembly to the vapor adaptor (Figure 2).
- 8.2 Apply soap solution to the dust cap or vapor coupler test assembly and vapor adaptor and check for visual leaks.
- 8.3 If no leaks are detected within two minutes after applying soap solution, proceed with monitoring pressure for ten minutes and record on Form 1 the time, pressure, and whether the processor is on.
- 8.4 Record temperature at the beginning and end of test period on Form 1. This test will be invalid if temperature differential exceeds 5°F.

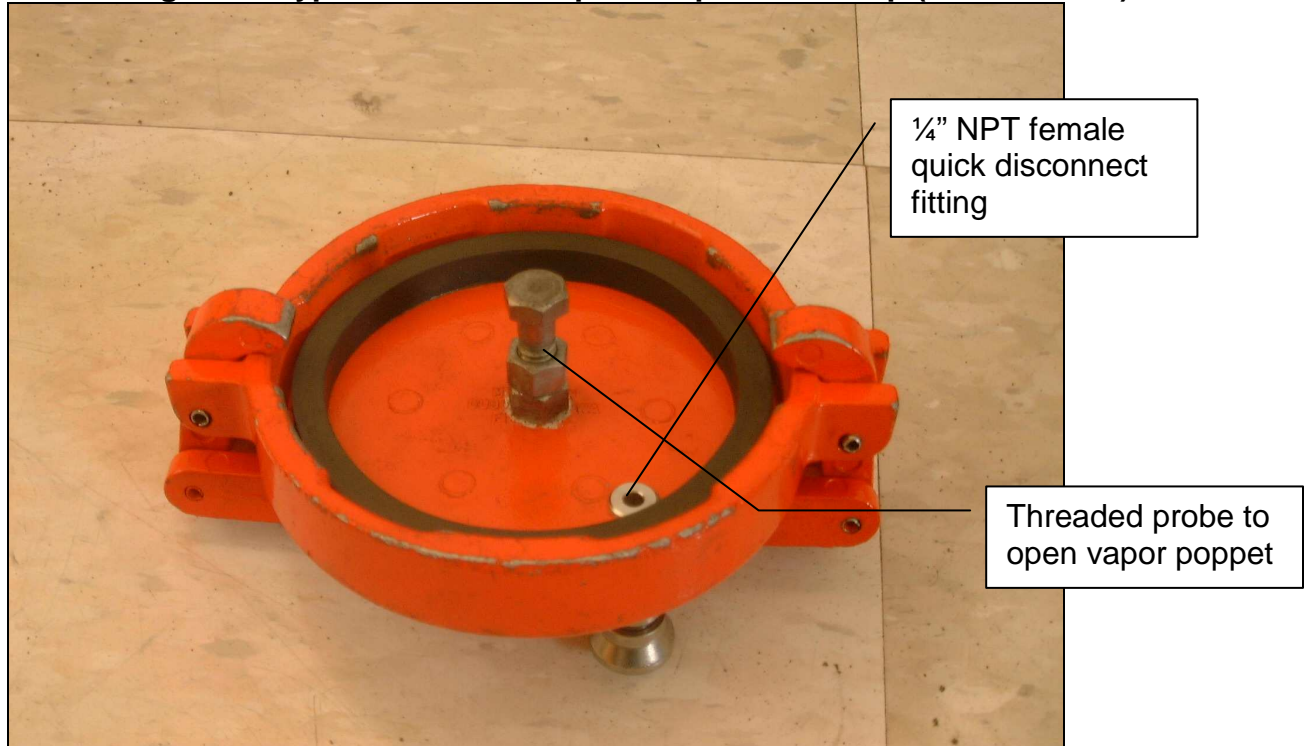
## **9. Reporting Results**

Report pressure data and other information as required in Form 1. District may require the use of alternate forms, provided they include the same minimum parameters as identified in Form 1.

## **10. Alternate Procedures**

This procedure shall be conducted as specified. Any modifications to this test procedure shall not be used unless prior written approval has been obtained from the ARB Executive Officer, pursuant to Section 14 of CP-201.

**Figure 1: Typical Modified Vapor Adaptor Dust Cap (Bottom View)**



**Figure 2: Typical Field Installation of UST Pressure Measurement Assembly**

